CLAIMS

1. A heat exchanger comprising a refrigerant inlet-outlet tank and a refrigerant turn tank arranged as spaced apart from each other, and a plurality of tube groups in the form of rows arranged at a spacing in the direction of flow of air through the heat exchanger between the tanks and each comprising a plurality of heat exchange tubes arranged in parallel at a spacing longitudinally of the tanks, the heat exchange tubes of each tube group having opposite ends joined to the respective tanks, the refrigerant inlet-outlet tank having interior divided by a partition wall into a refrigerant inlet header chamber and a refrigerant outlet header chamber arranged in the direction of flow of air, each of the two header chambers being in communication with the heat exchange tubes of the tube group of at least one row, a refrigerant flowing into the inlet header chamber of the refrigerant inlet-outlet tank being flowable through the corresponding heat exchange tubes into the refrigerant turn tank, where the refrigerant changes its course to flow into the outlet header chamber of the refrigerant inlet-outlet tank through the corresponding heat exchange tubes,

the refrigerant turn tank being provide with a uniformalizing member for making uniform divided flows of the refrigerant from the inlet header chamber into the heat exchange tubes communicating with the inlet header chamber.

2. A heat exchanger according to claim 1 wherein the uniformalizing member comprises a divided flow control plate dividing the interior of the refrigerant turn tank into two

spaces arranged in the direction of flow of air, the two spaces being in communication with each other, the heat exchange tubes in communication with the inlet header chamber communicating with one of the spaces of the refrigerant turn tank, the heat exchange tubes in communication with the outlet header chamber communicating with the other space of the refrigerant turn tank.

3. A heat exchanger according to claim 2 wherein the divided flow control plate has one or at least two refrigerant passing holes formed therein, and the two spaces are held in communication through the refrigerant passing holes.

4. A heat exchanger according to claim 3 wherein the refrigerant flows through the refrigerant passing holes in the divided flow control plate in countercurrent relation with the flow of air.

5. A heat exchanger according to claim 3 wherein the divided flow control plate has two refrigerant dam portions at respective opposite end portions thereof and is provided between the two refrigerant dam portions with a refrigerant passing portion having one or at least two refrigerant passing holes, the length of each of the refrigerant dam portions being at least 15% of the entire length of the divided flow control plate, the combined area of all the refrigerant passing holes formed in the refrigerant passing portion being 130 to 510 mm^2.

6. A heat exchanger according to claim 3 wherein the divided flow control plate has two refrigerant dam portions at respective opposite end portions thereof and is provided

between the two refrigerant dam portions with a refrigerant passing portion having one or at least two refrigerant passing holes, the length of each of the refrigerant dam portions being at least 15% of the entire length of the divided flow control plate, the heat exchanger being 20 to 75% in opening ratio which is the ratio of the number of refrigerant passing holes formed in the refrigerant passing portion to the number of heat exchange tubes of each tube group.

7. A heat exchanger according to claim 3 wherein the divided flow control plate has two refrigerant dam portions at respective opposite end portions thereof and is provided between the two refrigerant dam portions with a refrigerant passing portion having one or at least two refrigerant passing holes, the length of each of the refrigerant dam portions being at least 15% of the entire length of the divided flow control plate, the combined area of all the refrigerant passing holes formed in the refrigerant passing portion being 130 to 510 mm^2, the heat exchanger being 20 to 75% in opening ratio which is the ratio of the number of refrigerant passing holes formed in the refrigerant passing portion to the number of heat exchange tubes of each tube group.

8. A heat exchanger according to claim 2 wherein the refrigerant turn tank comprises a first member of aluminum having the heat exchange tubes joined thereto, and a second member of an aluminum extrudate brazed to the first member at a portion thereof opposite to the heat exchange tubes, and the divided flow control plate is integral with the second member.

9. A heat exchanger according to claim 1 wherein the outlet header chamber of the refrigerant inlet-outlet tank has interior divided by a partition plate into a first space communicating with the corresponding heat exchange tubes and a second space for the refrigerant to flow out therefrom, the two spaces being in communication with each other.

10. A heat exchanger according to claim 9 wherein the partition plate has one or at least two refrigerant passing holes formed therein, and the two spaces are held in communication through the refrigerant passing holes.

11. A heat exchanger according to claim 9 wherein the refrigerant inlet-outlet tank comprises a first member of aluminum having the heat exchange tubes joined thereto, and a second member of an aluminum extrudate brazed to the first member at a portion thereof opposite to the heat exchange tubes, and the partition wall and the partition plate are integral with the second member.

12. A heat exchanger according to claim 9 wherein the refrigerant inlet-outlet tank is provided at one end thereof with a refrigerant inlet communicating with the inlet header chamber and a refrigerant outlet communicating with the second space of the outlet header chamber.

13. A heat exchanger according to claim 1 wherein each tube group comprises at least seven heat exchange tubes.

14. A refrigeration cycle comprising a compressor, a condenser and an evaporator, the evaporator being a heat exchanger according to any one of claims 1 to 13.

15. A vehicle having installed therein a refrigeration

cycle according to claim 14 as an air conditioner.

16. A heat exchanger comprising a refrigerant inlet-outlet tank and a refrigerant turn tank arranged as spaced apart from each other, and a plurality of tube groups in the form of rows arranged at a spacing in the direction of flow of air through the heat exchanger between the tanks and each comprising a plurality of heat exchange tubes arranged in parallel at a spacing longitudinally of the tanks, the heat exchange tubes of each tube group having opposite ends joined to the respective tanks, the refrigerant inlet-outlet tank having interior divided by a partition wall into a refrigerant inlet header chamber and a refrigerant outlet header chamber arranged in the direction of flow of air, each of the two header chambers being in communication with the heat exchange tubes of the tube group of at least one row, a refrigerant flowing into the inlet header chamber of the refrigerant inlet-outlet tank being flowable through the corresponding heat exchange tubes into the refrigerant turn tank, where the refrigerant changes its course to flow into the outlet header chamber of the refrigerant inlet-outlet tank through the corresponding heat exchange tubes,

the inlet header chamber of the refrigerant inlet-outlet tank having interior divided by a flow dividing resistance plate into a first space communicating with the corresponding heat exchange tubes and a second space for the refrigerant to flow in, the flow dividing resistance plate having one refrigerant passing hole formed therein.

17. A heat exchanger according to claim 16 wherein the

refrigerant passing hole is formed at a longitudinal midportion of the flow dividing resistance plate.

18. A heat exchanger according to claim 16 wherein the refrigerant passing hole is positioned between a pair of heat exchange tubes adjacent to each other longitudinally of the refrigerant inlet-outlet tank and included among the heat exchange tubes in communication with the inlet header chamber of the refrigerant inlet-outlet tank.

19. A heat exchanger according to claim 16 wherein the refrigerant passing hole has an area larger than the combined cross sectional area of refrigerant channels in one heat exchange tube.

20. A heat exchanger according to claim 16 wherein the refrigerant passing hole is circular and has a diameter of 3 to 8 mm.

21. A heat exchanger according to claim 16 wherein the refrigerant inlet-outlet tank has a wall portion to which the heat exchange tubes communicating with the first space are joined and which has a flow dividing member inwardly projecting from a part thereof corresponding to the refrigerant passing hole for causing the refrigerant to dividedly flow longitudinally of the inlet header chamber upon flowing through the refrigerant passing hole.

22. A heat exchanger according to claim 21 wherein the flow dividing member is a ridge projecting toward the resistance plate in the form of an angle and extending widthwise of the inlet header chamber.

23. A heat exchanger according to claim 16 wherein the

outlet header chamber of the refrigerant inlet-outlet tank has interior divided by a partition plate into a first space communicating with the corresponding heat exchange tubes and a second space for the refrigerant to flow out therefrom, and a refrigerant passing hole is formed in the partition plate.

24. A heat exchanger according to claim 23 wherein the refrigerant inlet-outlet tank comprises a first member of aluminum having the heat exchange tubes joined thereto, and a second member of an aluminum extrudate brazed to the first member at a portion thereof opposite to the heat exchange tubes, and the partition wall, the flow dividing resistance plate and the partition plate are integral with the second member.

25. A heat exchanger according to claim 16 wherein the refrigerant inlet-outlet tank is provided at one end thereof with a refrigerant inlet communicating with the second space of the inlet header chamber and a refrigerant outlet communicating with the outlet header chamber.

26. A heat exchanger according to claim 16 wherein the refrigerant turn tank has interior divided by a divided flow control plate into a first space in communication with the heat exchange tubes communicating with the first space of the inlet header chamber of the refrigerant inlet-outlet tank and a second space communicating with the heat exchange tubes communicating with the outlet header chamber of the refrigerant inlet-outlet tank, and the divided flow control plate has a refrigerant dam portion at a position corresponding to the refrigerant passing hole in the flow dividing resistance plate with respect to the longitudinal direction of the two tanks,

the divided flow control plate being provided with a refrigerant passing portion having a refrigerant passing hole at a position other than the dam portion.

27. A heat exchanger according to claim 26 wherein the refrigerant dam portion of the divided flow control plate has a length of at least 28 mm.

28. A heat exchanger according to claim 26 which is 20 to 90% in opening ratio which is the ratio of the number of refrigerant passing holes formed in the divided flow control plate to the number of heat exchange tubes in each tube group.

29. A heat exchanger according to claim 26 wherein the refrigerant turn tank comprises a first member of aluminum having the heat exchange tubes joined thereto, and a second member of an aluminum extrudate brazed to the first member at a portion thereof opposite to the heat exchange tubes, and the divided flow control plate is integral with the second member.

30. A refrigeration cycle comprising a compressor, a condenser and an evaporator, the evaporator being a heat exchanger according to any one of claims 16 to 29.

31. A vehicle having installed therein a refrigeration cycle according to claim 30 as an air conditioner.